BRAIN INTERNATIONAL SCHOOL

Mathematics Assignment **Class: VIII** **November 2024**

EXPONENTS AND POWERS

1. Find the multiplicative inverse of:

   (i) 3^{-3} (ii) 10^{-10}

2. Simplify the following and write in exponential form.

   $(i)\ 2^3 \times 3^3$ $(ii)\ \left(\frac{4}{5}\right)^5 \times \left(\frac{5}{6}\right)^5$

3. Simplify the following and write in exponential form.

   (i) $(3^6 \div 3^8)^4 \times 3^{-4}$ (ii) $\frac{1}{27} \times 3^{-3}$

4. Express 81^{-3} as a power with base 3.

5. Find the value of k if $(-2)^{k+1} \times (-2)^3 = (-2)^7$

6. If $\frac{x}{y} = \left(\frac{3}{2}\right)^{-2} \div \left(\frac{3}{7}\right)^0$, find the value of $\left(\frac{x}{y}\right)^{-3}$

7. Find the value of x if

   $\left(\frac{125}{27}\right) \times \left(\frac{125}{27}\right)^x = \left(\frac{5}{3}\right)^{18}$

8. Solve the following: $(81)^{-4} \div (729)^{2-x} = 9^{4x}$

9. Simplify:

   $\frac{(-2)^3 \times (-2)^7}{3 \times 4^6}$

10. Find x so that $(-5)^{x+1} \times (-5)^5 = (-5)^7$

11. If $(p^3 \times p^{-2}) \times (q^5 \times q^{-3}) = 50$, then what are the values of p and q?

12. By what number should 7^4 be multiplied so that the result if 7?

13. The standard form for 0.000064 is

    (a) 6.4×10^4 (b) 6.4×10^{-4} (c) 6.4×10^{-5} (d) 6.4×10^5

14. The value of $(2^0 \times 3^0 \times 4^0)^0$ is

    (a) 9 (b) 1 (c) 0 (d) −1

15. **Assertion(A) :** 10^{-1} is equal to −1.

    Reason (R): The power of a number says how many times to use the number in a multiplication.

    In the above question, a statement of **Assertion(A)** is followed by a statement of **Reason (R).** Choose the correct option.

    (a) Both Assertion and Reason are true and Reason is a correct explanation of Assertion.
    (b) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.
    (c) Assertion is true and Reason is false
    (d) Assertion is false and Reason is true.

DIRECT AND INVERSE PROPORTIONS

1. Which of the following situations is an example of direct proportion?
   (a) The perimeter p of a square and its side length a.
   (b) The length l and the width w of a rectangle, given the area remain constant.
   (c) The number of units of a product that can be purchased given a fixed amount of money.
   (d) The number of rows m and the number of columns n in which a fixed number of marbles cab be arranged.
2. If 30 cupcakes are prepared using 500 grams of flour, how many cupcakes can be prepared by using 750 grams of flour assuming each cupcake is equal in size?
   (a) 15 (b) 25 (c) 36 (d) 45
3. To draw a model of a residential society, Jaya used a scale factor 1:300. If the height of the building in model is 12 cm, which of these can be actual height of the building?
   (a) 20 m (b) 25 m (c) 30 m (d) 36 m
4. The weight of 12 sheets of a thick paper is 40 grams. How many sheets would weigh 1 kg?
   (a) 480 (b) 360 (c) 300 (d) 366
5. A car takes 2 hours to reach a destination by travelling at 60 km/h. How long will it take while travelling at 80km/h?
   (a) 1h 30 min (b) 1 h 40 min (c) 2 h 40 min (d) 2 h 30 min
6. A car is moving at a uniform speed of 90 km/h. How far will it travel in 30 minutes?
7. If the cost of 30 books is ₹ 210, how much will 12 books cost?
8. If 15 men can do a work in 27 days, how many men will do the same work in 9 days?
9. A machine can fill 28 containers in 5 hours. How many containers can be filled in 28 hours?
10. Hema can type 1200 words per hour. How many words can she type in 20 minutes?

CASE STUDY-1

In a hospital, the quantity allotted by the authority for the purchase of milk for 800 patients is 400 litres per day.

i. How many patients can be accommodated in the hospital if the monthly (of 30 days) ration of milk is raised to 22500 litres, assuming that the quota per head remains the same?

ii. Due to a strike, the supply of milk discontinued for a day and the number of patients increased to 1000. The authority decided to reduce the quota per head. How much quantity will be served to each patient if there is a reserve of 350 litres?